

# TAU-STK-01

## GUIDE TO THE HYFIRE TAURUS SURVEY KIT



## **WARNINGS AND LIMITATIONS**

Our devices use high quality electronic components and plastic materials that are highly resistant to environmental deterioration. However, after 10 years of continuous operation, it is advisable to replace the devices in order to minimize the risk of reduced performance caused by external factors.

Ensure that this device is only used with compatible control panels.

Detection systems must be checked, serviced and maintained on a regular basis to confirm correct operation.

Smoke sensors may respond differently to various kinds of smoke particles, thus application advice should be sought for special risks.

Sensors cannot respond correctly if barriers exist between them and the fire location and may be affected by special environmental conditions.

Refer to and follow national codes of practice and other internationally recognized fire engineering standards.

Appropriate risk assessment should be carried out initially to determine correct design criteria and updated periodically.

Use only for Taurus fire detection and alarm systems.

## **WARRANTY**

All devices are supplied with the benefit of a limited 5 years warranty relating to faulty materials or manufacturing defects, effective from the production date indicated on each product.

This warranty is invalidated by mechanical or electrical damage caused in the field by incorrect handling or usage.

Product must be returned via your authorized supplier for repair or replacement together with full information on any problem identified.

Full details on our warranty and product's returns policy can be obtained upon request.

## THE PURPOSE OF THE SURVEY KIT

A survey kit is a diagnostic system that is used to test the wireless channels or frequency bands that are used, in general, by Taurus systems.

The aim of the test is to determine the degree of reliability of the various channels, select the less congested ones and use those for building up the Taurus wireless system in the installation phase.

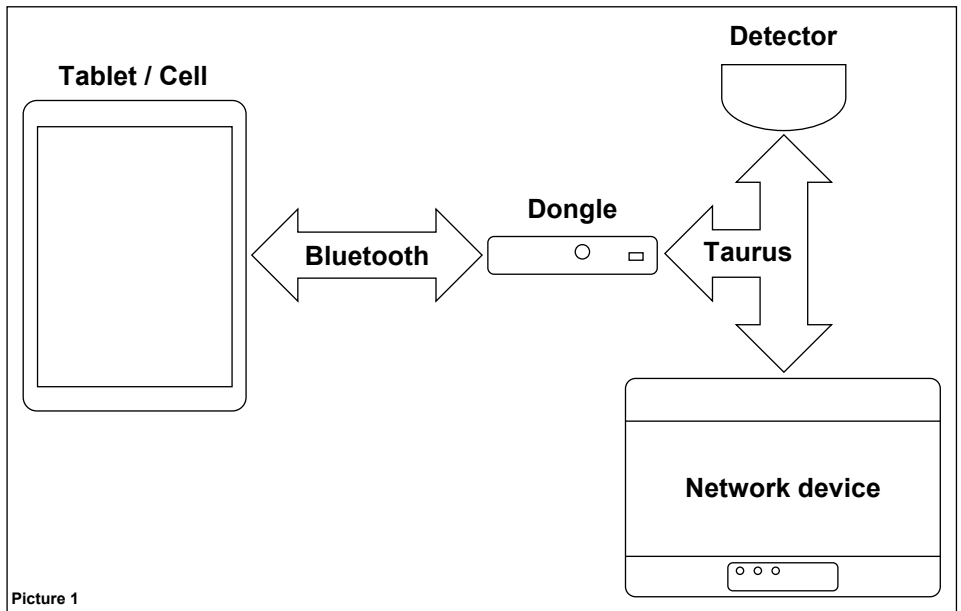
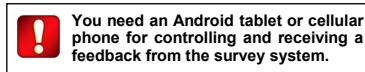
## SURVEY KIT MAIN PARTS

A survey key is always composed by the following fundamental components:

- A survey network device.
- A survey detector device.
- A dongle interface device.

The **TAU STK-01** survey kit model has these fundamental elements.

Additionally, you need an Android tablet or cellular phone for controlling and receiving a feedback from the survey system.



The tablet / cell communicates to the dongle device through the Bluetooth wireless protocol.

Dongle, detector and network devices of the survey system communicate between each other through the Taurus wireless protocol.

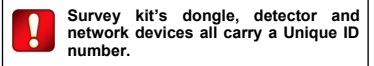
## 3. THE UNIQUE IDENTIFIER

The unique identifier is a 8 alphanumeric character sequence that univocally identifies every Taurus device that comes out of the factory; it is written in every device's permanent memory.

Unique identifier can be indicated as **UID**, **UUID** or **Unique ID**.

It is labelled below the QR code on each Taurus device and it is encoded in the QR code.

Survey kit's dongle, detector and network devices all carry a Unique ID number.



**TECHNICAL SPECIFICATIONS**

<b>Survey detector</b>	
Taurus RF frequency	868 MHz
Taurus RF channels	66
Taurus RF radiated power	14 dBm (25 mW)
Batteries type, number, voltage and capacity	2 x CR123A (3 V, 1.25 Ah)
Maximum allowed humidity	95% RH (non condensing)

**Table 1**

<b>Survey network device</b>	
Taurus RF frequency	868 MHz
Taurus RF channels	66
Taurus RF radiated power	14 dBm (25 mW)
External power supply voltage	12 Vdc
Maximum current load	36 mA (12 Vdc)
Batteries type, number, voltage and capacity	4 x CR123A (3 V, 1.25 Ah)
Humidity range	5% RH to 90% RH (non condensing)
Device dimensions	235 mm x 160 mm x 70 mm
Device weight	700 g

**Table 2**

<b>Dongle device</b>	
Taurus RF frequency	868 MHz
Taurus RF channels	66
Taurus RF radiated power	14 dBm (25 mW)
Bluetooth standards	IEEE 802.15.1 Bluetooth low energy (BLE) 4.2 specification
Batteries type, number and voltage	2 x LR6 AA (1.5 V)
Maximum load	65 mA (peak impulsive)
Allowed temperature range	-10 °C to +55 °C
Maximum allowed humidity	95 % RH (non condensing)
Dimensions	80 mm x 120 mm x 25 mm
Weight	100 g (without batteries)

**Table 3**

## **POWERING UP - SURVEY DETECTOR**

- 1) Remove the survey detector from its wall adapter base. Keep the base still and rotate the detector counter-clockwise; separate the detector from its base.
- 2) Under the detector, push the closing clip and extract the battery cover.
- 3) Insert both CR123A batteries, the first one in the **Secondary** or **B** lodgement, the second one in the **Primary** or **A** lodgement.



**Batteries' polarities must match the + and - signs printed on the detector.**

- 4) Detector's LEDs will flash for some seconds: wait that their blinking stops.
- 5) Reinstall the battery cover.
- 6) Reinstall the detector on the adapter base.
- 7) The survey detector is powered on.



**Always remember to remove the batteries after you have finished using the survey test system: this will avoid discharging them.**

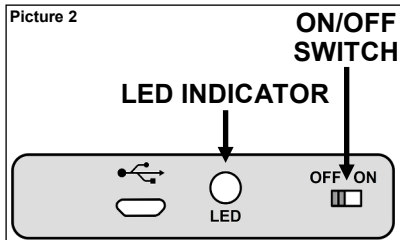
## **POWERING UP - DONGLE DEVICE**

- 1) From the back of the dongle device, slide off the batteries' cover.
- 2) Insert both AA into the batteries' lodgement.



**Batteries' polarities must match the + and - signs printed in the lodgement.**

- 3) Reinstall the batteries' cover.
- 4) Switch on the device.



- 5) Dongle's LED performs some red-green blinking for a few seconds.
- 6) Dongle's LED starts blinking red every second: the device is now powered on.



**Always remember to switch off the dongle after you have finished using the survey test system: this will avoid discharging the batteries.  
If you intend not to use the dongle for a long period, remove the batteries.**

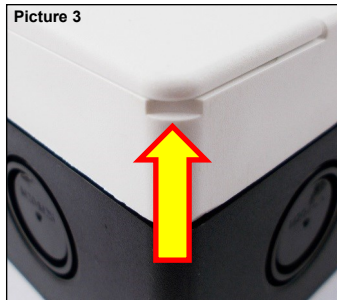
## **POWERING UP - SURVEY NETWORK DEVICE**

The survey network device can be power supplied either externally or by batteries.

If the survey network device has batteries installed and is connected to the wall power supply, priority is given to the external source, so as to prolong batteries' lifespan.

### **INSTALLING THE BATTERIES**

- 1) Remove the two plastic screw covers from the front side. Lifting the protective covers using the gaps at their angles makes this operation easier.

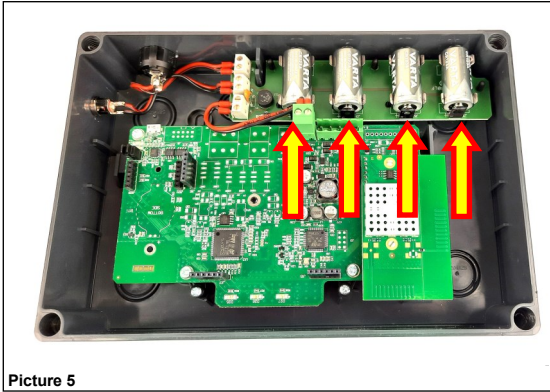



- 2) Remove the four sealing plastic screws.




- 3) Remove the front protective cover.

4) Insert the four CR123A batteries into their lodgements.



 Batteries' polarities must match the + and - signs printed on the batteries' board.

 If you intend not use the network device for a long period, and you have batteries in it, remember to remove them.

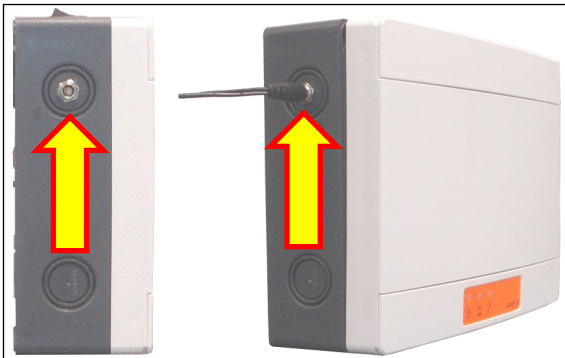
5) Reinstall the front cover.

6) Screw the front cover.

7) Reinstall the plastic screw covers.

#### PLUGGING IN THE DEVICE

Survey kit provides a 12 V wall adapter power supply; its output jack can be inserted into the socket on the side of the network device.



#### SWITCHING ON


Survey network device's on/off switch is located on the top side.

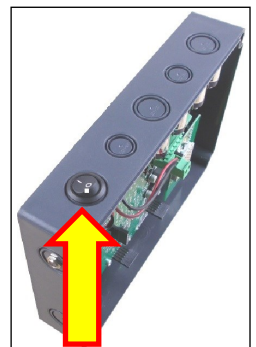
1) Switch on **I**.

All three LED blink once.

After, the power on LED blinks green every second: the survey network device is powered on.

2) Finished using the device, switch to **O**.

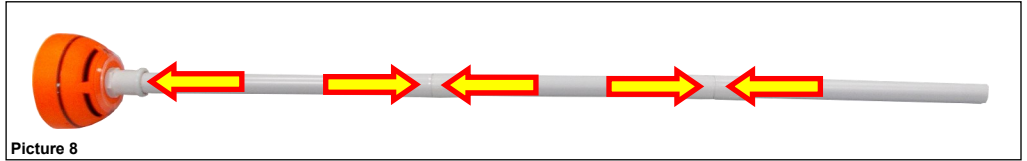
 When you have finished using the network device, switch it off, especially if you are using batteries' power supply; this will avoid running them out.



## ELEVATING THE TEST DEVICES

If a wireless network or a child device are intended to be installed at a certain height from the floor, to test the signal's reliability from that position it is necessary to elevate the test survey's devices to the planned installation height. For this purpose, the survey kit provides an elevating assemblable pole.

For the survey detector's height extension assemble the supplied pole as follows in the picture:



Picture 8

Pole's end has to be inserted into the survey detector's lodgement as follows:



Picture 9



**Please mind that the pole's assemblable segments are fitted in but not blocked !**



**Make sure the pole is well and safely inserted into the survey detector's adapter.**



**Make sure the detector's wall base and the network device's cover are safely installed and blocked.**



**For safety reasons, do not elevate the survey devices more than 2 meters from the floor.**



## OVERVIEW OF TAURUS SYSTEMS

Taurus systems are always composed by a central node device (**TAU-TRM-01** or **TAU-CEM-01**), a certain number of child devices (detectors, call points, sounders, etc.) and, if the wireless coverage area needs to be extended, one or more expansion nodes (**TAU-EXM-01**).

The model of the central node selected by the installer depends by the control panel's type; if the control panel is intelligent and uses the Vega protocol, a **TAU-TRM-01** model has to be chosen; if the control panel is conventional, the choice must fall on the **TAU-CEM-01** model.

Communication ranges of the wireless devices are limited: add **TAU-EXM-01** devices to the system to cover completely the fire protected area.

Child devices are linked to **TAU-TRM-01**, **TAU-CEM-01** and **TAU-EXM-01** network devices.

Purpose of the installation process is to integrate the wireless Taurus system with the control panel.

## WIRELESS CHANNELS

The Taurus system has a total of 66 wireless channels or frequency ranges that can be used for communicating data.

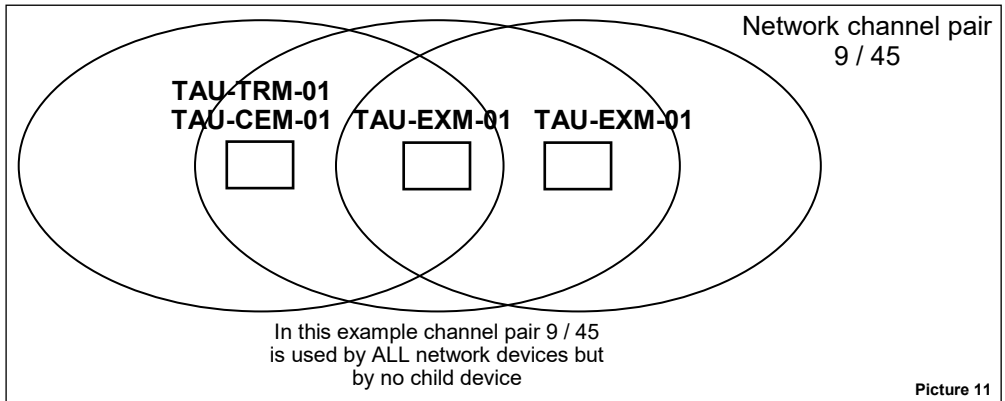
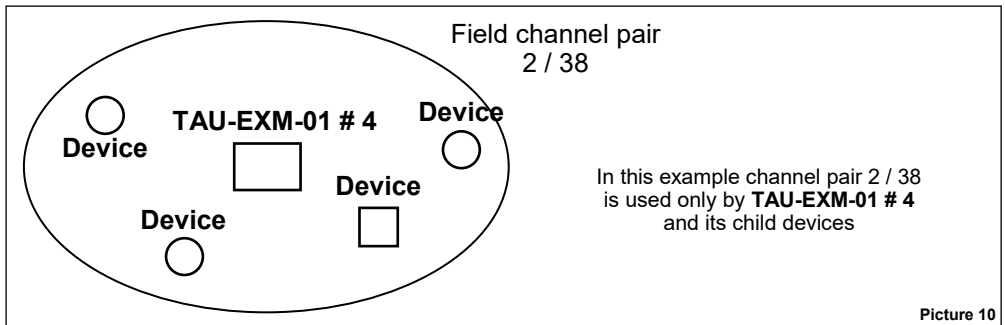
These channels are paired in fixed predefined patterns (see appendix A at the end of this manual for their list).

Channel pairs have specialized uses:

- **Field channels:** used by network devices (**TAU-TRM-01**, **TAU-CEM-01** and **TAU-EXM-01**) for communicating with their own child devices (detectors, call points, etc.).
- **Network channels:** used by network devices (**TAU-TRM-01**, **TAU-CEM-01** and **TAU-EXM-01**) to communicate between each other.

All child devices use a **local field channel pair**.

All network devices use a **local field channel pair** and a **global network channel pair**.



The reason for this channel's pairing system policy stems from the necessity to grant wireless connection security by having a "spare channel" in case the other one fails.

## THE PURPOSE OF SURVEYING

The purpose of using the survey kit and performing this type of surveying in general, is to test and determine which wireless channels are best to be used for a wireless Taurus system.

Channels that undergo survey are:

- Network channels (used by network devices, only, throughout the system).
- Field channels (used locally by network devices and their child devices).
- Wireless channels used for the "discovery" operation (wireless channels used only during installation).

## PERFORMING THE SURVEY

This paragraph gives you general guidelines on how to perform a survey test. The survey procedure is well described in the **HOW TO PERFORM A SURVEY** paragraph, but here an introduction to the procedure is given.

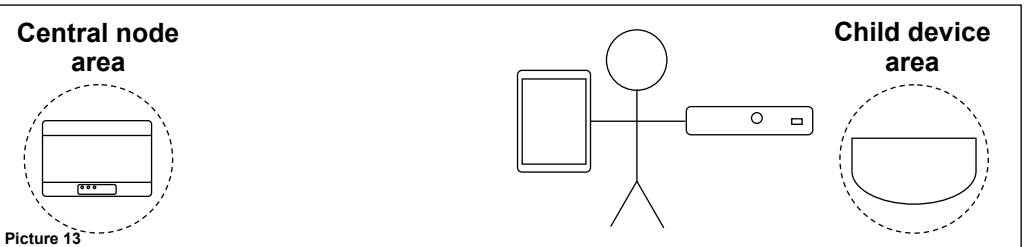
### **CENTRAL NODE**

- 1) Place the dongle in the position where you want to install the central node.
- 2) Position yourself with the tablet / cell near the dongle.
- 3) The network device and survey detector are not involved in this operation.



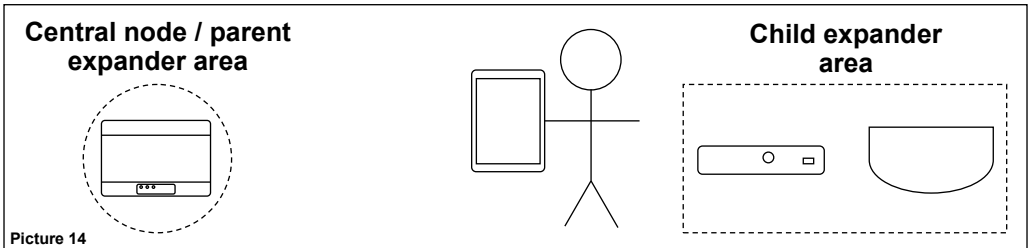
### **CENTRAL NODE'S CHILD DEVICE**

- 1) Place the survey network device where you want to install the central node.
- 2) Place the survey detector in the location where you want to install the child device.
- 3) Position yourself with the tablet / cell and dongle device near the survey detector.



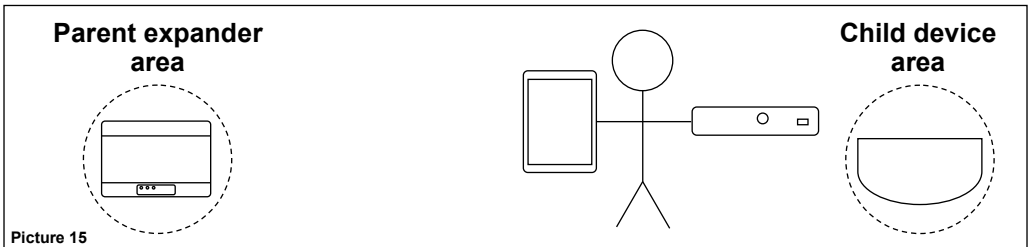
### CHILD EXPANDER

- 1) Place the survey network device where you want to install the central node or the parent expander.
- 2) Place the dongle and the survey detector in the position where you want to install the "child" expander.
- 3) Position yourself with the table / cell near the dongle and the survey detector.



### EXPANDER'S CHILD DEVICE

- 1) Place the survey network device where you want to install the parent expander device.
- 2) Place the survey detector in the location where you want to install the child device.
- 3) Position yourself with the table / cell and dongle device near the survey detector.



## THE TAURUS SURVEY

**Taurus Survey** is the app software used on the Android tablet / phone to drive the survey system.

Survey tests and their results are started and gathered through this app.

### INSTALLING THE TAURUS SURVEY

If not already installed on your Android tablet / phone, the **Taurus Survey** app can be downloaded from the "Google Play Store".

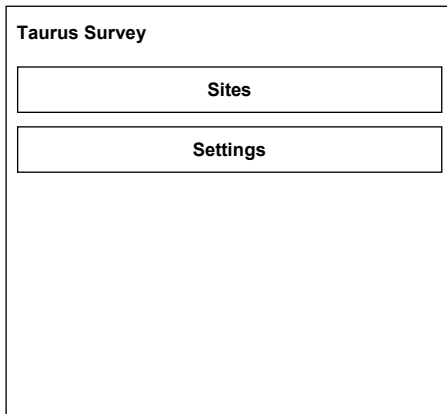
- 1) Tap the "Play Store" icon on your table / phone.
- 2) Look for **Taurus Survey**.
- 3) Select **Taurus Survey**.
- 4) Download and install the **Taurus Survey** app.

### LAUNCHING THE TAURUS SURVEY

To launch the **Taurus Survey**, tap its icon on the screen.

### TAURUS SURVEY - THE MAIN WINDOW

Once launched, the main window appears:



You have the following options:


<b>Sites</b>	This option gives you access to the management of the installation sites you have added ( <b>My Sites</b> window).
<b>Settings</b>	This option permits you to configure the survey system in the settings window.

## ADD A NEW INSTALLATION SITE

To add a new site to your app, press **Sites** on the **Taurus Survey** main window; the **My Sites** window appears:

**My Sites**

**No available sites**

 **Add a new site**

Tap **Add a new site**; the **New site** window appears on the screen:

**New site**

**Name**  
\_\_\_\_\_

**Address**  
\_\_\_\_\_

**Building**  
\_\_\_\_\_

**Floor**  
\_\_\_\_\_

**Description**  
\_\_\_\_\_

**Save**

Tap on the single lines to add specific site's data:

<b>Name</b>	The name of the installation site.
<b>Address</b>	The address of the installation site.
<b>Building</b>	The building number or name of the installation site.
<b>Floor</b>	The floor number where the installation site is located.
<b>Description</b>	The description of the installation site.

Press **Save** to generate the new virtual site.

## MANAGING THE INSTALLATION SITES

1) From the **Taurus Survey** main window press **Sites**:



2) Tap on the arrow at the left of the desired site's line:



Information about the selected site is spread under the line, together with three command options:

<b>Surveys</b>	You can add, remove, manage and perform surveys; you can generate survey reports.
<b>Reports</b>	Detailed data on performed surveys is given in survey reports. Reports can be shared and exported. This option gives you access to the reports generated for the surveys related to this site.
<b>Edit</b>	You can modify the site's data you entered before ( <b>Edit site</b> window).
<b>Remove</b>	You can remove the virtual site from the device. Confirmation will be requested.




**Removing a site, removes all its surveys related to it. Generated reports are not deleted.**


## ADD A NEW SURVEY

- 1) From the **Taurus Survey** main window press **Sites**.
- 2) Tap on the arrow at the left of the desired site's line.
- 3) Tap the **Surveys** option:

**Site 1 - My Surveys**

**No available surveys**

 **Add a new survey**

 **Generate site report**

- 4) Tap **Add a new survey**:

**New survey**

**Site**  
\_\_\_\_\_

**TX/EXP**  
\_\_\_\_\_

**Name**  
\_\_\_\_\_

**Description**  
\_\_\_\_\_

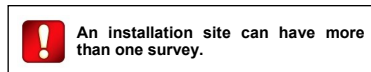
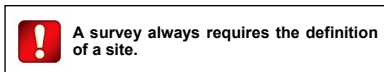
**Location**  
\_\_\_\_\_

**Save**

The following fields can be edited:

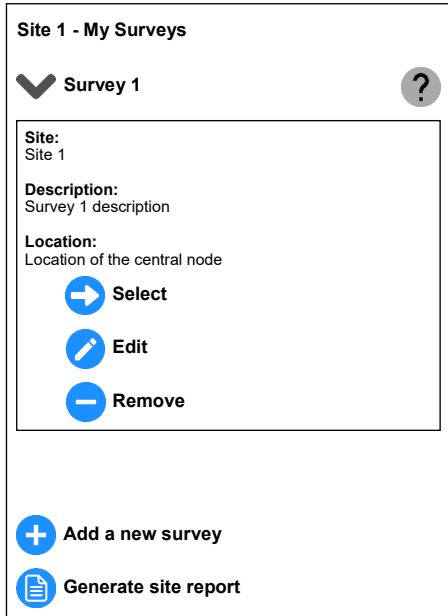
<b>Site</b>	The name of the virtual site. This field cannot be edited directly.
<b>TX/EXP</b>	The model of the central node of the system. <b>TRSL</b> (Translator) if you are using an intelligent Vega control panel. <b>C_EXP</b> (Conventional expander) if you are using a conventional control panel.
<b>Name</b>	The name identifying this specific survey.
<b>Description</b>	A more detailed description of this survey.
<b>Location</b>	Where this survey test will take place.

Press **Save** to generate the new virtual survey.



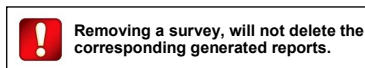
## MANAGING SURVEYS

- 1) From the **Taurus Survey** main window press **Sites**.
- 2) Tap on the arrow at the left of the desired site's line.
- 3) Tap the **Surveys** option.
- 4) Tap on the arrow at the left of the desired survey's line:



Information about the selected survey is spread under the line, together with three command options:

<b>Select</b>	Press this command icon to perform effectively the survey. This operation will be explained later in detail.
<b>Edit</b>	You can modify the survey's data you entered before ( <b>Edit survey</b> window).
<b>Remove</b>	You can remove the virtual survey from the device. Confirmation will be requested.





## SETTING THE SURVEY SYSTEM

Before launching the application, make sure that:

- 1) Tablet / cell's Bluetooth is activated.
- 2) Tablet / cell's localization is activated.
- 3) Launch the **Taurus Survey** app.
- 4) Press the **Settings** options on the main window:

Taurus Survey
Associate your dongle
Bluetooth state: <b>Enabled</b> Position state: <b>Enabled</b> Dongle is: <b>not associated</b>
Dongle UID
Network Device UID
Child Device UID
Save

The following lines indicate the actual configuration state:

<b>Bluetooth state</b>	Indicates whether the required Bluetooth connection is activated or not. <b>Disabled:</b> Bluetooth is not activated. <b>Enabled:</b> Bluetooth is activated.
<b>Position state</b>	Indicates whether the required localization feature of the tablet / cell is activated or not. <b>Disabled:</b> localization is not activated. <b>Enabled:</b> localization is activated.
<b>Dongle is</b>	The association status with the tablet / cell device with the dongle interface device. <b>Associated:</b> the device is associated to the dongle. <b>Not associated:</b> the device is not associated to the dongle.

- 5) To make the survey system work, the tablet / cell device has to be associated with the dongle, the network device and the "detector" supplied with the **TAU STK-01**; fill out the following fields:

<b>Dongle UID</b>	Insert here the Unique Identifier of the dongle device; UID is written under the QR code label placed on the device itself.
<b>Network Device UID</b>	Insert here the Unique Identifier of the network device; QR code labels are located internally and externally of the device.
<b>Child Device UID</b>	Insert here the Unique Identifier of the "detector" device of the kit. QR code and UID are placed under the device.

- 6) Check that the dongle device is switched on.

- 7) Tap the **Associate your dongle** button.

The **Trying to connect to dongle...** message appears on the screen.

- 8) Wait a few seconds that the dongle's association completes.

- 9) Tap the **Save** button.

- 10) Return to the app's main screen.



**During association, check that the dongle device is switched on.**

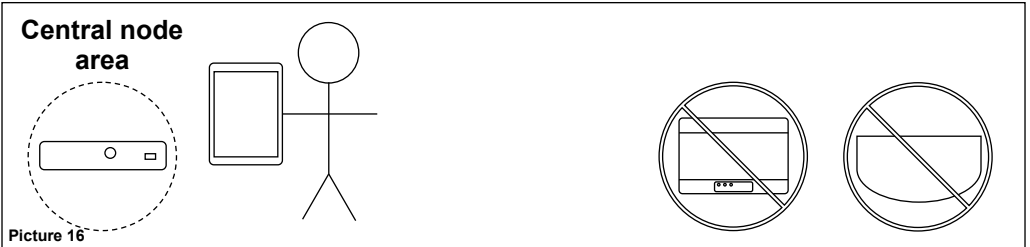


**At the end of the configuration, state lines must indicate as follows:**

**Bluetooth state: Enabled**  
**Position state: Enabled**  
**Dongle is: associated**

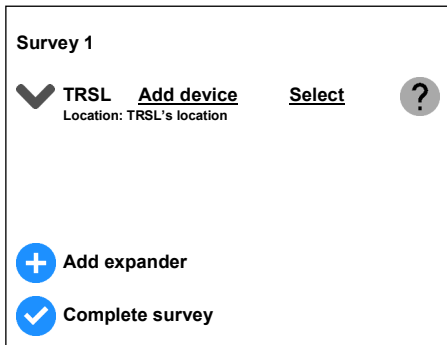
## HOW TO PERFORM A SURVEY

### CENTRAL NODE'S SURVEY



Picture 16

- 1) From the **Taurus Survey** main window press **Sites**.
- 2) Tap on the arrow at the left of the desired site's line.
- 3) Tap the **Surveys** option.
- 4) Tap on the arrow at the left of the desired survey's line.
- 5) Press **Select**:



- 6) Press **Select** on the survey **TRSL**'s line.



**Make sure the dongle is powered on, so also the survey detector and the survey network device. These devices are to be set and associated in the Settings window.**

The following window appears:

**Survey 1**


**Device**  
\_\_\_\_\_


**Description**  
\_\_\_\_\_


**Location**  
\_\_\_\_\_


**Note**  
\_\_\_\_\_


**Last modifications**  
\_\_\_\_\_


 **Edit**

 **Remove**

 **Start scan**

**Scan result: UNKNOWN** 



 **Photo**

giving you the following options:

<b>Edit</b>	By tapping this button you can go to the <b>Edit device</b> window (central node device).
<b>Start scan</b>	Tap here to trigger the central node's survey scan.
<b>Scan result</b>	Gives the result of the survey scan. In this case, <b>UNKNOWN</b> means that it has not been performed yet.
<b>Photo</b>	You can snap a photo illustrating the location of the central node. This photo will be integrated in the final report.

7) Place the dongle in the position where you want to install the central node.

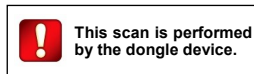
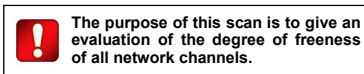
8) Position yourself with the tablet / cell near the dongle.

The network device and the survey detector are not involved in this operation.




9) Tap **Start scan**.

The Dongle will scan all Network channels in order to estimate the best pair at the end of Survey. Also the dongle will start to scan the field channels until to find the first pair free in order to assign those channels to the Network Device for communication with its child devices.

A **Scanning...** section of the window will appear, indicating the scanning progress.





At the end of the test, **Scan result** visualizes one of the following:

Channel Survey Result	Evaluation
 <b>GOOD</b>	One or more Network channels have a Good evaluation. First pair of Field channels available have a Good evaluation.
 <b>MARGINAL</b>	All Network channels have a Marginal evaluation. First pair of Field channels available have a Marginal evaluation. <b>ALLOWED</b>
 <b>BAD</b>	All Network channels have a BAD evaluation. All Field channels have a BAD evaluation. <b>NOT ALLOWED</b>


10) Go back:


### Survey 1

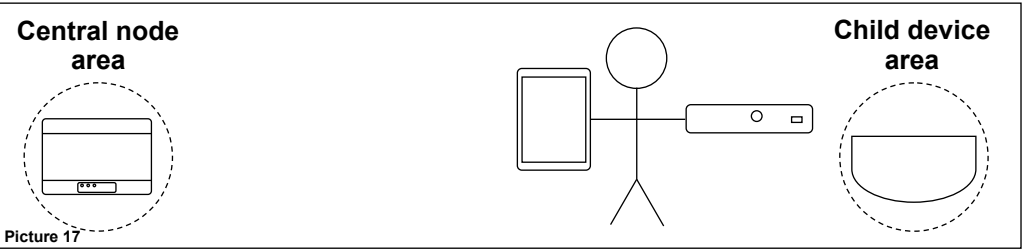
 **TRSL**   Add device   Select   

Location: TRSL's location

 **Add expander**

 **Complete survey**



Picture 17

Starting from this window:

**Survey 1**

▼ **TRSL**   **Add device**   **Select**   ✔  
Location: TRSL's location

+ **Add expander**

✔ **Complete survey**

1) Tap **Add device** on the **TRSL** row:

**New device**

**Device** ▼

---

**Description**

---

**Location**

---

**Note**

---

**Save**

**The correspondence between the visualized Taurus Survey generic device type and the specific commercial product code is to be found in appendix B of this manual.**

where:

<b>Device</b>	The child device type. You can select the child device type by tapping on the upside-down triangle on the right; a child device list will drop down on the screen: tap and select the device type you want to insert.
<b>Description</b>	A description of this child device.
<b>Location</b>	The location of this child device.
<b>Note</b>	Any other note about this child device.

2) Tap the **Save** button to save the edited child device's data.

This screen appears:

**Survey 1**

---

**Device**

---

**Description**

---

**Location**


---


**Note**


---


**Last modifications**


---


 **Edit**

 **Remove**

 **Start scan**

**Scan result: UNKNOWN** 



 **Photo**


Where:

<b>Edit</b>	You can go to the child device edit window tapping here ( <b>Edit device</b> window).
<b>Remove</b>	Tap here to remove this child device.
<b>Start scan</b>	Tap here to trigger the child device's survey scan.
<b>Scan result</b>	Gives the result of the survey scan. In this case, <b>UNKNOWN</b> means that it has not been performed yet.
<b>Photo</b>	You can snap a photo illustrating the location of the child device. This photo will be integrated in the final report.


- 3) Place the survey network device where you want to install the central node.
- 4) Place the survey detector in the location where you want to install the child device.
- 5) Position yourself with the table / cell and dongle device near the survey detector.
- 6) Tap **Start scan**.

The survey Network and the survey detector will communicate in order to evaluate the LINK QUALITY.

A **Scanning...** section of the window will appear, indicating the current progress of the operation.






**The purpose of this scan is to give an evaluation of the degree of the wireless communication quality between the parent network device and its child device.**





**The scan is performed by the survey detector with the aid of the survey network device.**

At the end of the test, **Scan result** visualizes one of the following:


	<b>GOOD</b>	Wireless communication quality has a <b>GOOD</b> final evaluation.
	<b>MARGINAL</b>	Wireless communication quality has a <b>MARGINAL</b> final evaluation.
	<b>BAD</b>	Wireless communication quality has a <b>BAD</b> final evaluation.

7) Go back:


**Survey 1**


 **TRSL** Add device Select 





Location: TRSL's location

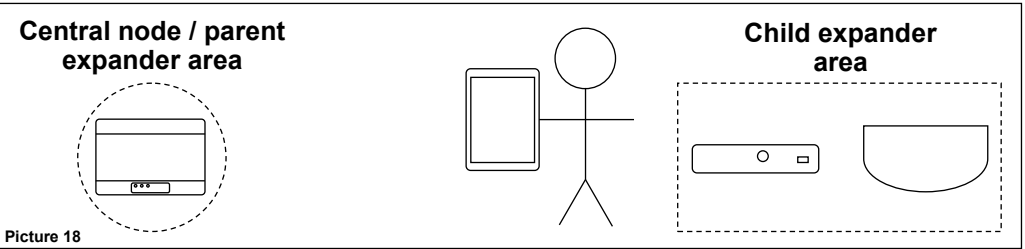
**OPT** Select 

Location: child device's location

 **Add expander**

 **Complete survey**

Survey Result	Mark indication Taurex	Evaluation
 <b>GOOD</b>	<b>4</b>	Wireless communication quality has an Excellent evaluation
 <b>GOOD</b>	<b>3</b>	Wireless communication quality has a Good evaluation
 <b>MARGINAL</b>	<b>2</b>	Wireless communication quality has a Marginal-Poor evaluation <b>NOT ALLOWED</b>
 <b>BAD</b>	<b>1</b>	Wireless communication quality has a Bad evaluation <b>NO COMMUNICATION</b>



Picture 18

Starting from this window:

**Survey 1**

**TRSL** Add device Select   
 Location: TRSL's location

**OPT** Select   
 Location: child device's location

**Add expander**

**Complete survey**

1) Tap **Add expander**:

**New device**

**Device**  ▼

**Description**

**Location**

**Target device**  ▼

**Note**

**Save**



2) Edit:

<b>Device</b>	The expander device type. Click on the upside-down triangle to have a drop-down list of the selectable device types ( <b>EXP</b> ).
<b>Description</b>	A description of the expander device.
<b>Location</b>	Where this expander device is intended to be installed.
<b>Target device</b>	Which device, of the virtual system, is the parent device. It can be the central node <b>TRSL / C_EXP</b> or an expander <b>EXP</b> . For better identifying the target / parent device it is warmly suggested to add its location, so options come out with <b>TRSL - Corridor, EXP - Office</b> and so on.
<b>Note</b>	Any useful note you want to add to this virtual device.

3) Tap **Save** to add this new expander device.



For better identifying the target / parent device it is warmly suggested to add its location, so target device options come out with **TRSL - Corridor, EXP - Office** and so on.

Survey scan window for the expander appears:

**Survey 1**

**Device**

---

**Description**

---

**Location**

---

**Target device**


---


**Note**


---


**Last modifications**


---


 **Edit**

 **Remove**

 **Start scan**

Scan result: **UNKNOWN** 




 **Photo**

<b>Edit</b>	You can go to the expander edit window tapping here ( <b>Edit device</b> window).
<b>Remove</b>	Tap here to remove this expander.
<b>Start scan</b>	Tap here to trigger the expander's survey scan.
<b>Scan result</b>	Gives the result of the survey scan. In this case, <b>UNKNOWN</b> means that it has not been performed yet.
<b>Photo</b>	You can snap a photo illustrating the location of the expander device. This photo will be integrated in the final report.


- 4) Place the survey network device where you want to install the parent expander or the central node.
- 5) Place the dongle and the survey detector in the position where you want to install the "child" expander.
- 6) Position yourself with the table / cell near the dongle and the survey detector.
- 7) Tap **Start scan**.

The Dongle will scan all Network channels in order to estimate the best pair at the end of Survey. Also the dongle will start to scan the field channels until to find the first pair free in order to assign those channels to the Network Device for communication with its child devices. When channel scanning finish, the survey Network and the survey detector will communicate in order to evaluate the LINK QUALITY.

A **Scanning...** section of the window will appear, indicating the current progress of the operation.






The purpose of this scan is to give an evaluation of the degree of freeness of all network channels, then evaluate the wireless communication quality between the parent network device and the child expander.




This scan is performed by the dongle device and the survey detector, with the aid of the survey network device.

At the end of the test, **Scan result** visualizes one of the following:

Channel Survey Result	Evaluation
 <b>GOOD</b>	One or more Network channels have a Good evaluation. First pair of field channels available have a Good evaluation. Wireless communication quality has an Excellent/Good (Mark 4/3) evaluation
 <b>MARGINAL</b>	All Network channels have a Marginal evaluation. First pair of Field channels available have a Marginal evaluation. Wireless communication quality has a Marginal-Poor (Mark 2) evaluation <b>NOT ALLOWED</b>
 <b>BAD</b>	All Network channels have a BAD evaluation. All Field channels have a Bad evaluation. Wireless communication quality has a Bad (Mark 1) evaluation <b>NO COMMUNICATION</b>


- 8) Go back:


**Survey 1**



**TRSL**   Add device   Select


Location: TRSL's location







**EXP**   Add device   Select

Location: EXP's location

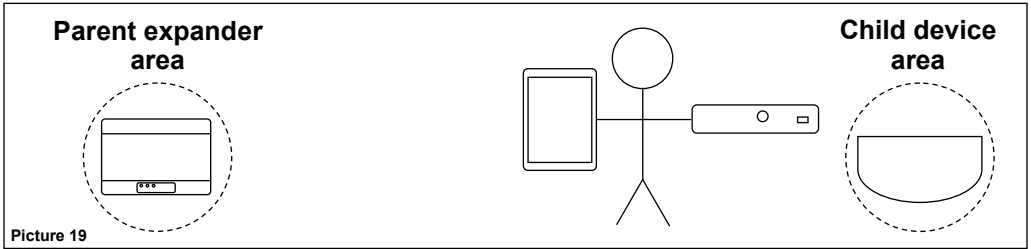




**Add expander**



**Complete survey**



Picture 19

Starting from this window:

**Survey 1**

- **TRSL**   Add device   Select   ✔  
Location: TRSL's location
- **EXP**   Add device   Select   ✔  
Location: EXP's location

+ Add expander

✔ Complete survey

1) Tap **Add device** on the **EXP** line:

**New device**

**Device** ▼

---

**Description**

---

**Location**

---

**Note**

---

**Save**

2) Edit:

<b>Device</b>	The child device type. You can select the child device type by tapping on the upside-down triangle on the right; a child device list will drop down on the screen: tap and select the device type you want to insert.
<b>Description</b>	A description of this child device.
<b>Location</b>	The location of this child device.
<b>Note</b>	Any other note about this child device.

3) Tap the **Save** button to save the edited child device's data.

This screen appears:

**Survey 1**

---

**Device**

---

**Description**

---

**Location**


---


**Note**


---


**Last modifications**


---


 **Edit**

 **Remove**

 **Start scan**

**Scan result: UNKNOWN** 



 **Photo**


where:

<b>Edit</b>	You can go to the child device edit window tapping here.
<b>Remove</b>	Tap here to remove this child device.
<b>Start scan</b>	Tap here to trigger the child device's survey scan.
<b>Scan result</b>	Gives the result of the survey scan. In this case, <b>UNKNOWN</b> means that it has not been performed yet.
<b>Photo</b>	You can snap a photo illustrating the location of the child device. This photo will be integrated in the final report.


- 4) Place the survey network device where you want to install the parent expander device.
- 5) Place the survey detector in the location where you want to install the child device.
- 6) Position yourself with the table / cell and dongle device near the survey detector.
- 7) Tap **Start scan**.

The survey Network and the survey detector will communicate in order to evaluate the LINK QUALITY.

A **Scanning...** section of the window will appear, indicating the current progress of the operation.






The purpose of this scan is to give an evaluation of the degree of the wireless communication quality between the parent network device and its child device.





The scan is performed by the survey detector with the aid of the survey network device.

At the end of the test, **Scan result** visualizes one of the following:


	<b>GOOD</b>	Wireless communication quality has a <b>GOOD</b> final evaluation.
	<b>MARGINAL</b>	Wireless communication quality has a <b>MARGINAL</b> final evaluation.
	<b>BAD</b>	Wireless communication quality has a <b>BAD</b> final evaluation.

8) Go back:



**Survey 1**

 **TRSL** Add device Select 


Location: TRSL's location

**OPT** Select 


Location: child device's location


 **EXP** Add device Select 





Location: EXP's location

**OPT** Select 

Location: child device's location

 **Add expander**



 **Complete survey**

Survey Result	Mark indication Taurex	Evaluation
 <b>GOOD</b>	<b>4</b>	Wireless communication quality has an Excellent evaluation
 <b>GOOD</b>	<b>3</b>	Wireless communication quality has a Good evaluation
 <b>MARGINAL</b>	<b>2</b>	Wireless communication quality has a Marginal-Poor evaluation <b>NOT ALLOWED</b>
 <b>BAD</b>	<b>1</b>	Wireless communication quality has a Bad evaluation <b>NO COMMUNICATION</b>


## SINGLE SURVEY TESTS' AND GENERAL SURVEY'S FINAL EVALUATION

Consider this example:


### Survey 2

 **TRSL** Add device Select 


Location: TRSL's location

**OPT** Select 


Location: child device #1 location


**MULTI** Select 

Location: child device #2 location





**BSND** Select 

Location: child device #3 location

 **Add expander**

 **Complete survey**

The icon at the right of every single survey test indicates its final evaluation:



	GOOD
	MARGINAL
	BAD
	UNKNOWN


The whole survey needs to be given a final evaluation:


1) Press **Complete survey**.

Considering the example above, the whole Survey 2 instance will indicate the worst result of the single tests, in this case **BAD**:

### Site 1 - My Surveys

 **Survey 2** 

 **Add a new survey**

 **Generate site report**

2) Perform again the failed test, implementing the adequate corrections.

Survey 2 global instance will achieve again the **UNKNOWN** status.

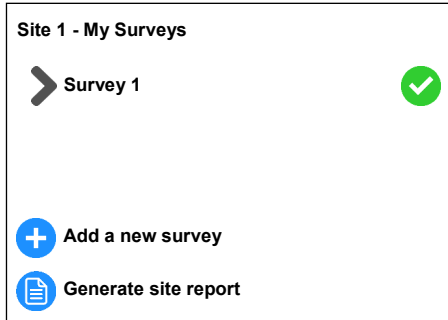
3) Tap again **Complete survey**.

If all single tests have a final **GOOD** evaluation, Survey 2 global instance will have a **GOOD** rating too.

## GENERATING REPORTS

Having done a **Complete survey** action:

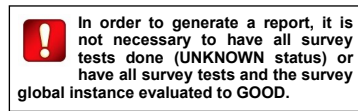
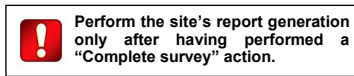
- 1) From the **Taurus Survey** main window press **Sites**.
- 2) Tap on the arrow at the left of the desired site's line.
- 3) Tap the **Surveys** option:



- 4) Tap the **Generate site report** option.

This generates a single report comprising all the surveys of the site.

Report is generated in Adobe's Portable Document Format (pdf).





Open a specific survey report.

Every report starts with the following title:

**Site survey report**

Site details are given:

**Site details**

- Name:** Site name.
- Address:** Address of the site.
- Building:** Building number or name.
- Floor:** Floor number.
- Description:** Site's description.
- Surveys:** The name of the surveys attached to the site.

Where:

<b>Name</b>	The name of the installation site.
<b>Address</b>	The address of the installation site.
<b>Building</b>	The building number or name of the installation site.
<b>Floor</b>	The floor number where the installation site is located.
<b>Description</b>	The description of the installation site.
<b>Surveys</b>	The survey's name made in this site.

The **Site high level summary** paragraph gives a summed-up list of the devices of the Taurus system:

**Site high level summary**

- 1 INTELLIGENT TRANSLATOR MODULE
- 2 EXPANDER MODULE
- 10 OPTICAL DETECTOR

Refer to appendix B for a correspondence between the report's device indication and its specific commercial model indication.

**Link quality legend**

**GOOD, MARGINAL, BAD, UNKNOWN**

**Link quality legend** is just a reference legend paragraph relating to the wireless link quality between the devices.

Gives you the following indications and colour associations:

<b>GOOD</b>	The wireless link quality is good.	<b>GREEN</b>
<b>MARGINAL</b>	The wireless link quality is on the acceptable limit. If you really can't do nothing to make the link quality <b>GOOD</b> , accept it, but you can have problems.	<b>YELLOW</b>
<b>BAD</b>	Not acceptable wireless link quality.	<b>RED</b>
<b>UNKNOWN</b>	The wireless link quality has not been evaluated yet.	<b>GREY</b>

Colour indications will be used throughout the report.



**Channels selection**

**TX/EXP:** Central node, Waiting room

Infrastructure channels: 9-45, 10-46, 11-47, 12-48, 13-49, 14-50, 15-51, 16-52

Device channels: 57-27

**Expander:** Expander #1, Corridor

Infrastructure channels: 9-45, 10-46, 11-47, 12-48, 13-49, 14-50, 15-51, 16-52

Device channels: 17-53

**Recommended infrastructure channels:** 9-45

**Autodiscovery:** available on channel A, B, C

**Wake-up link:** available

## Summary report on: Survey 3

Network channels and device channels analysis is reported in this section.

**Survey 3** written in the title above is the name given to the survey.

You have two paragraphs: **Infrastructure channels** and **Device channels**; the first is about the analysis of network channels, the other one is about the analysis of field channels.

**TX/EXP:** refers to the central node. At its right there is the description given to the central node and its location.

### Infrastructure channels

**TX/EXP:** Central node, Waiting room.

9-45, 10-46, 11-47, 12-48, 13-49, 14-50, 15-51, 16-52

**Expander:** Expander #1, Office #1.

9-45, 10-46, 11-47, 12-48, 13-49, 14-50, 15-51, 16-52

**Recommended infrastructure channels:** 9-45

**Autodiscovery:** available on channel A, B, C

**Recommended autodiscovery channel:** A

**Wake-up link:** available

**Expander:** refers to an expander device. At its right there is the description given to the expander and its location.

Under **TX/EXP** and **Expander** there is a list of scanned channel pairs, each of them coloured with the corresponding link quality colour. In the above example, channel pairs are all green (**GOOD** rating).

**Recommended infrastructure channels:** this is the channel pair that is best suitable to be used.

**Autodiscovery:** gives the available channels for the discovery operation and their link quality evaluation. In this example A, B and C in green colour (**GOOD** rating).

**Recommended autodiscovery channel:** the discovery channel recommended to be used.

**Wake-up link:** it is possible to use the "wake-up" feature to link the child devices to their network devices.

**TX/EXP:** refers to the central node. At its right there is the description given to the central node and its location.

### Device channels

**TX/EXP:** Central node, Waiting room.

55-25

**Expander:** Expander #1, Office #1.

56-26

**Expander:** refers to an expander device. At its right there is the description given to the expander and its location.

The channel pairs under **TX/EXP:** and **Expander:** refer to the *field channels* (or child device channels) of the network devices.

- Assign a distinct field channel pair to every network device.
- Make sure the channel pair you use has a **GOOD** rating or at least **MARGINAL** (if **GOOD** is not possible). Expect a minor degree of reliability from a **MARGINAL** channel pair (if compared to a **GOOD** one). As previously said, **MARGINAL** means that the wireless link quality is on the acceptable limit. If you really can't do nothing to make the link quality **GOOD**, accept it, but you can have problems.

**Connected devices - link quality summary report on: First survey**

This section reports a verbose evaluation of the link quality between the network devices and their respective child devices:

<b>TX/EXP:</b> Central node, Waiting room.	
OPTICAL DETECTOR, Meeting room.	GOOD
OPTICAL DETECTOR, Meeting room #2.	GOOD
OPTICAL DETECTOR, Waiting room.	GOOD
<b>Expander:</b> Expander #1, Office #1.	GOOD
CALL POINT (RED), Meeting room # 3.	GOOD

**TX/EXP:** refers to the central node. At its right there is the description given to the central node and its location.


**Expander:** refers to an expander device. At its right there is the description given to the expander and its location.

As seen in this example, every child device has a **GOOD** link quality evaluation with its parent network device; this **GOOD** evaluation is furtherly stressed by the green colour of the link quality indication.

Every child device line has the report's child device indication (see appendix B), its location and the link quality evaluation.

**Infrastructure channel selection - detailed report: First survey**

This section reports a specific technical wireless evaluation for every system's network device.

	CENTRAL NODE
<b>Type:</b>	INTELLIGENT TRANSLATOR MODULE
<b>Location:</b>	Waiting room
<b>Connected devices:</b>	Number of devices connected to network

Where:

<b>Description</b>	The description you entered for the network device.
<b>Type</b>	Appendix B's standard device denomination.
<b>Location</b>	Where the device is located, as you specified in the software.

Follows an evaluation of the network channels:

<b>Infrastructure channels:</b>	9	45
<b>Background noise average:</b>	-119	-120
<b>Background noise variability:</b>	2.367	2.078
<b>Channels:</b>	GOOD	GOOD

Where:

<b>Infrastructure channels</b>	The recommended and best network channels that resulted from the survey.
<b>Background noise average</b>	Wireless background noise average value in dBm.
<b>Background noise variability</b>	Wireless background noise variability value in dBm.
<b>Channels</b>	<b>GOOD, MARGINAL, BAD</b> link quality evaluation for the first and second channel of the pair.

**READING REPORTS (CONTINUED)**

<b>Device channels:</b>	55	25
<b>Background noise average:</b>	-120	-119
<b>Background noise variability:</b>	3.031	8.256
<b>Channels:</b>	GOOD	GOOD

This is an evaluation of the field / child device's channel pair; this pair is the best one found during the survey. Lines inform you of the following:

<b>Device channels</b>	The recommended and best field / child device's channels that resulted from the survey.
<b>Background noise average</b>	Wireless background noise average value in dBm.
<b>Background noise variability</b>	Wireless background noise variability value in dBm.
<b>Channels</b>	<b>GOOD, MARGINAL, BAD</b> link quality evaluation for the first and second channel of the pair.

**Notes:**

**Date recorded:** 25/08/2020 16:24:17


Last in this section:

**Date recorded** gives the date and time of the recording of the technical wireless evaluation.

### Connected devices - link quality detailed report: First survey

This section is about the specific link quality between the Taurus devices; this means the link quality between the network and their child devices, the central node and its expanders, and the expanders and their child expanders.

General data is given:

	DETECTOR 1
<b>Type:</b>	OPTICAL DETECTOR
<b>Location:</b>	Waiting room
<b>Connected to:</b>	INTELLIGENT TRANSLATOR MODULE - Waiting room

Where:

<b>Description</b>	The description you entered for the device.
<b>Type</b>	Appendix B's standard device denomination.
<b>Location</b>	Where the device is located, as you specified in the software.
<b>Connected to</b>	The parent device and its location.
<b>Number of connected devices</b>	Applies to network devices only: the numerical count of child devices and child expander devices.

**READING REPORTS (CONTINUED)**

The between-devices' link quality evaluation follows:

**Scan results:**

<b>RSSI Avg:</b>	-31	<b>RSSI Var:</b>	2.159
<b>Background Avg:</b>	-109	<b>Background Var:</b>	0.815
<b>Packet loss:</b>	0%		
<b>Status:</b>	GOOD		

Where:

<b>RSSI Avg</b>	Average link quality evaluation in dBm units.
<b>RSSI Var</b>	Link quality variation in dBm units.
<b>Background Avg</b>	Background noise average value in dBm units.
<b>Background Var</b>	Background noise variation value in dBm units.
<b>Packet loss</b>	Percentage of lost data packets during the survey.
<b>Status</b>	Link quality's final evaluation.

Last in this section:

**Notes:**

**Date recorded:** 25/08/2020 16:36:16

**Date recorded** gives the date and time of the recording of the technical wireless evaluation.

## **APPENDIX A - STANDARD CHANNEL PAIRS**

In this appendix section you can find the lists of the standard channel pairs used by the Taurus system.

<b>Field channel pairs</b>	
1	37
2	38
3	39
4	40
5	41
6	42
7	43
8	44
17	53
18	54
55	25
56	26
57	27
58	28
59	29
60	30
61	31
62	32
63	33
64	34
65	35
66	36

**Table 4**

<b>Network channel pairs</b>	
9	45
10	46
11	47
12	48
13	49
14	50
15	51
16	52

**Table 5**

## **APPENDIX B - TAURUS DEVICES INDICATIONS IN THE APP AND IN THE REPORTS**

The Taurus Survey app visualizes generic device type codes; these codes correspond to specific commercial device models:

<b>Taurus Survey's device type</b>	<b>Report's device indication</b>
TRSL	INTELLIGENT TRANSLATOR MODULE
C_EXP	CONVENTIONAL EXPANDER MODULE
EXP	EXPANDER MODULE
OPT	OPTICAL DETECTOR
MULTI	MULTICRITERIA DETECTOR
THERM	THERMAL DETECTOR
MCP	CALL POINT (RED)
INP_M	SUPERVISED INPUT MODULE
WSND	WALL SOUNDER
WSND_BW	WALL SOUNDER BEACON
BSND	BASE SOUNDER
BSND_BR	BASE SOUNDER BEACON (RED LIGHT)
BSND_BW	BASE SOUNDER BEACON (WHITE LIGHT)

Table 6